



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Adress: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,382	09/23/2003	Akira Ishii	117231	1934
25944	7590	06/05/2008	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			VO, QUANG N	
ART UNIT	PAPER NUMBER		2625	
MAIL DATE	DELIVERY MODE			
06/05/2008	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/667,382	<b>Applicant(s)</b> ISHII, AKIRA
	<b>Examiner</b> QUANG N. VO	<b>Art Unit</b> 2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 18 April 2008.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

#### **DETAILED ACTION**

Applicant's argument, see Pre-Brief Conference request, filed 04/18/2008, with respect to claims 1-16 have been fully considered. The final rejection has been withdrawn.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Because in claims 1 and 13, the phrase "...satisfy a relationship that **first vectors**, each being either **one of two** screen vectors in a spatial frequency domain defined by basis vectors in two directions of a halftone dot pattern in the first –color or second-color halftone screen, are parallel to each other and second vector, each being the other one of the two screen vector are not parallel to each other". Two screen vectors, they are either parallel to each other or not parallel to each other, the examiner does not see how it is possible to have a vector A parallel to another vector B and have vector A not parallel to vector B at the same time.

Claims 2-12, 12-15 are rejected under 35 USC 112 first paragraph because they depend on rejected claims 1 and 13.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Because in claim 1, the phrase "...satisfy a relationship that **first vectors**, each being either **one of two** screen vectors in a spatial frequency domain defined by basis vectors in two directions of a halftone dot pattern in the first –color or second-color halftone screen, are parallel to each other and second vector, each being the other one of the two screen vector are not parallel to each other". Two screen vectors, they are either parallel to each other or not parallel to each other, the examiner does not see how it is possible to have a vector A parallel to another vector B and have vector A not parallel to vector B at the same time.

Claims 2-12, 12-15 are rejected under 35 USC 112 second paragraph because they depend on rejected claims 1 and 13.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng et al. (Cheng) (US 2002/0089708) in view of Ishii (6,185,014).

With regard to claim 1, Cheng discloses an image forming apparatus (e.g., a need for convenient systems and methods for determining the spatial and angular positioning of the halftone dots necessary to avoid moiré patterns, paragraph 0043) for digitally reproducing a color image using a screen set consisting of a halftone screen for each color (e.g., an image processor operative to halftone an image so that the image can be rendered without displeasing moiré patterns includes a selected set of halftone screens, paragraph 0016), wherein a first-color halftone screen (e.g., cyan (C) halftone screen with **spatial vectors (basic vectors) V(1c)** and **V(2c)** and **frequency vectors (screen vectors) F(1c)** and **F(2c)**, figure 3, paragraph 0052) and a second-color halftone screen (e.g., magenta (M) halftone screen with **spatial vectors (basic vectors) V(1m)** and **V(2m)** and **frequency vectors (screen vectors) F(1m)** and **F(2m)**, figure 3, paragraph 0052)) in screen set satisfy a relationship that first vectors (e.g., **frequency vectors (screen vectors) F(1c)** and **F(1m)**, figure 3, paragraph 0052), each being either one of two screen vectors in a spatial frequency domain defined by basis vectors (e.g., spatial vectors (basic vectors) **V(1c)** and **V(1m)**, figure 3) in two directions of a halftone dot pattern in the first-color or second-color halftone screen, and second vectors (e.g., **frequency vectors (screen vectors) F(2c)** and **F(2m)**, figure 3, paragraph 0052).

Cheng differs from claim 1, in that he does not explicitly disclose one of the two screen vectors of the first halftone screen is parallel to one of the screen vectors of the second halftone screen, and the other screen vector of the first halftone screen is not parallel with the other screen vector of the second halftone screen.

Ishii' (6,185,014) discloses forming color images by superimposing images of a plurality of colors one on another by assigned different screen angle to different halftone screens to prevent moire (column 1, lines 5-12, column 2, lines 32-40).

Since the first-color halftone screen associated with two screen vectors and the second-color halftone screen associated with other two screen vectors; one of the screen vector of the first-color halftone screen is parallel with one of the second-color halftone screen; and the other two screen vectors is not parallel as claimed in claim 1. Thus, the screen angle (the angle between 2 screen vectors) of the first-color halftone screen must not equal to the angle (the angle between 2 screen vectors) of the second color halftone screen, which is similar to Ishii' (6,185,014) have taught. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Cheng to include one of the first screen vectors are parallel to one of the screen vectors of the second halftone screen, and second vectors, each being the other one of the two screen vectors, are not parallel to each other as taught by Ishii(6,185,014). It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Cheng by the teaching of Ishii'(6,185,014) to prevent a moiré phenomenon.

With regard to claim 2, Cheng discloses wherein first-color halftone screen and second-color halftone screen further satisfy a relationship that first vectors are equal in magnitude (e.g., figure 2, paragraph 0046).

With regard to claim 3, Cheng discloses wherein at least one of first-color and second-color halftone screens is a non-orthogonal screen (paragraph 0066).

With regard to claim 4, the subject matter is similar to claim 1. Therefore claim 4 is rejected as set forth above for claim 1.

With regard to claim 5, Cheng discloses wherein second vector of first-color halftone screen matches either one of secondary spectra, each represented by the sum or the difference of two screen vectors of fourth-color halftone screen, and first vector of third-color halftone screen matches either one of secondary spectra, each represented by the sum or the difference of two screen vectors of second-color halftone screen (paragraphs 0053, 0054).

With regard to claim 6, Cheng discloses wherein first vector of first-color halftone screen, first vector of third-color halftone screen, and second vector of second-color halftone screen form a closed triangle, and second vector of first-color halftone screen, first vector of fourth-color halftone screen, and second vector of third-color halftone screen form a closed triangle (figure 4, paragraphs 0053-0055).

With regard to claim 7, Cheng discloses wherein second vector of first-color halftone screen matches either one of two screen vectors of a third-color halftone screen in screen set (e.g., equations (5a) and (5b) can be considered as a general description for the three color moiré free condition, which can include all other possible combination..., paragraphs 0053-0055).

With regard to claim 8, Cheng discloses wherein a secondary spectrum represented by the sum or the difference of the two screen vectors of first-color halftone screen matches either one of two screen vectors of a fourth-color halftone screen in screen set (e.g., equations (5a) and (5b) can be considered as a general description for

the three color moiré free condition, which can include all other possible combination..., paragraphs 0053-0055).

With regard to claim 9, Cheng discloses wherein screen set comprises four color halftone screens, and the four color halftone screens have a relationship that two closed triangles can be formed using two screen vectors of each of the four color halftone screens, without a remainder (e.g., equations 5(a) and 5(b) can be considered as a general description for the three color moiré free condition, which can include all other possible combinations..., paragraph 0055).

With regard to claim 10, Cheng and Ishii'(6,185,014) combined, discloses wherein in a case where directions of halftone dot arrangement match between first-color and second-color halftone screens, halftone dot intervals in the matched direction of the first-color halftone screen differ from the halftone dot intervals in the matched direction of the second- color halftone screen (e.g., different non-parallelogram shaped dots: squares, rectangles, ellipses, etc. can be superimposed for halftone screens, Cheng's paragraph 0051; and different halftone screens are set at different angles Ishii's column 2, lines 32-40. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have recognized the halftone dots intervals in the matched direction of the first color halftone screen generally differ from the halftone dot intervals in the matched direction of the second-color halftone screen).

With regard to claim 11, Cheng discloses wherein screen set comprises four color halftone screens (e.g., with a fourth respective color separation, paragraph 0017), and among a total of 8 primary spatial frequency spectra each corresponding to one of

the screen vectors (e.g., each halftone screen has 2 frequency vectors (screen vectors), figure 2; in the case of four halftone screen, there will be 8 screen vectors for a total of 8 primary spatial frequency spectra) for each color and a total of 8 secondary spatial frequency spectra each corresponding to the sum or the difference of the screen vectors for the same color (e.g., sum and different of the screen vectors equations 5a-5d and include all other possible combination, paragraphs 0055, 0056), the number of different spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of 8 primary spatial frequency spectra is less than 8 (Note: since Cheng discloses four color halftone screens with 2 frequency vectors (screen vectors) and include all other possible combinations of sum and differences of frequency vectors (screen vectors). Therefore the number of different spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of 8 primary spatial frequency spectra must be less than 8 as claimed in claim 11).

With regard to claim 12, Cheng discloses wherein screen set comprises four halftone screens (e.g., with a fourth respective color separation, paragraph 0017), one for each color, and among a total of 8 primary spatial frequency spectra, each corresponding to one of the screen vectors (e.g., each halftone screen has 2 frequency vectors (screen vectors), figure 2; in the case of four halftone screen, there will be 8 screen vectors for a total of 8 primary spatial frequency spectra) for each color and a total of 8 secondary spatial frequency spectra, each corresponding to the sum or the difference of the screen vectors for the same color (e.g., sum and different of the screen vectors equations 5a-5d and include all other possible combination, paragraphs 0055,

0056), the number of different spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of 8 primary spatial frequency spectra is 6 (Note: since Cheng discloses four color halftone screens with 2 frequency vectors (screen vectors) and include all other possible combinations of sum and differences of frequency vectors (screen vectors). Therefore the number of different spatial frequency spectra contained in a band of from the minimum frequency to the maximum frequency of 8 primary spatial frequency spectra must be less than 8 as claimed in claim 12).

Referring to claim 13:

Claim 13 is the method claim corresponding to operation of the device in claim 1 with method steps corresponding directly to the function of device elements in claim 1. Therefore claim 13 is rejected as set forth above for claim 1.

Referring to claim 14:

Claim 14 is the method claim corresponding to operation of the device in claim 2 with method steps corresponding directly to the function of device elements in claim 2. Therefore claim 14 is rejected as set forth above for claim 2.

Referring to claim 15:

Claim 15 is the method claim corresponding to operation of the device in claim 3 with method steps corresponding directly to the function of device elements in claim 3. Therefore claim 15 is rejected as set forth above for claim 3.

With regard to claim 16, the subject matter is similar to claim 1. Therefore claim 16 is rejected as set forth above for claim 1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUANG N. VO whose telephone number is (571)270-1121. The examiner can normally be reached on 7:30AM-5:00PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Y. Poon can be reached on 5712727440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Quang N. Vo/  
Examiner, Art Unit 2625

/King Y. Poon/  
Supervisory Patent Examiner, Art  
Unit 2625